

01-09-02 JC10 Rec'd PCT/PTO 28 DEC 2001

FORM PTO-1390
(REV. 9-2001)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

543.02

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5

10/030754

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/GB00/02505

29/06/2000

30/06/1999

TITLE OF INVENTION

BOAT CLEANING ASSEMBLY

APPLICANT(S) FOR DO/EO/US

HUDD, Adrian Gerald

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unsigned)
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☐ Other items or information:

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PCT/GB00/02505

531 Rec'd

28 DEC 2001

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21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO..... **\$1040.00**

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO **\$890.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$740.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$710.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =**CALCULATIONS PTO USE ONLY**

\$890.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	20 - 20 =	0	x \$18.00	\$ 0
Independent claims	1 - 3 =	0	x \$84.00	\$ 0
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	\$280.00

TOTAL OF ABOVE CALCULATIONS =

\$1,170.00

☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above
are reduced by 1/2.

\$ 585.00

+

SUBTOTAL =

\$585.00

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

TOTAL NATIONAL FEE =

\$585.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00** per property +

\$

TOTAL FEES ENCLOSED =

\$ 585.00

Amount to be
refunded:

\$

charged:

\$

- a. ☒ A check in the amount of \$ 585.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 04-0822. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card
information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

SIGNATURE

Malcolm B. Wittenberg

NAME

27,028

REGISTRATION NUMBER

CLEANING ASSEMBLY

The present invention relates to cleaning assemblies and in particular to marine vessel cleaning assemblies.

- It is common practice for both power and sailing craft to be cleaned at least twice a year, and where performance and fuel economy are required, these can be increased significantly. However, anti-fouling paints are becoming increasingly expensive and because of world-wide anti-pollution laws the paints available to both the commercial and leisure industries are becoming less effective.
- 10 According to a first aspect of the invention there is provided a marine vessel cleaning assembly comprising cleaning means and displacement means supported on a framework adapted for location under the water, the arrangement being such that, in use, the displacement means is operative to urge the cleaning means generally upwardly and downwardly
- 15 of a hull of a floating marine vessel whilst said cleaning means is in contact with fouling on the hull.

Preferably the displacement means comprises pivot means which is operative to pivot the cleaning means, about a substantially horizontal axis, generally upwardly and downwardly of the hull.

- 20 Preferably the cleaning means comprises rotatably mounted brush means which, in use, is caused to rotate.

The assembly desirably comprises sensing means which is operative to monitor a measure of the resistance to the rotation of the brush means.

Preferably the assembly comprises control means which is operative to control the degree of generally upwardly and downwardly directed displacement of the brush means.

5 The assembly preferably comprises lateral displacement means which is operative to allow generally lateral displacement of the cleaning means with respect to the hull.

Preferably the pivot means is operative to pivot the cleaning means about an axis which is submerged.

10 The assembly preferably comprises a pair of arms, the cleaning means being mounted on the arms. The cleaning means is preferably located towards one end of each arm. Preferably each arm is pivotable generally upwardly and downwardly of the hull. Preferably each arm is pivotable generally laterally of the hull.

15 According to a second aspect of the invention there is provided a method of cleaning the hull of a floating marine vessel comprising displacing cleaning means generally upwardly and downwardly of a hull, and arranging that the cleaning means contacts with fouling on the hull.

Preferably the method comprises pivoting the cleaning means generally upwardly and downwardly of the hull.

20 The method preferably comprises causing relative translational movement of the hull with respect to the pivotal axis of the cleaning means.

The method desirably comprises causing the cleaning means to rotate.

Preferably the method comprises controlling the degree of generally upwardly and downwardly directed movement of the cleaning means in response to a measure of the resistance to rotation of the cleaning means.

The invention will now be further described by way of example only with
5 reference to the accompanying drawings in which:

Figure 1 is a plan view of an assembly in accordance with the invention;

Figure 2 is a side elevation of the assembly shown in Figure 1;

10 Figure 3 is a front elevation of the assembly shown in Figures 1 and 2, and

Figure 4 is a block diagram of the control arrangement of the assembly shown in Figures 1, 2 and 3.

With reference to the figures, a marine vessel cleaning assembly 1 comprises a pair of pivotable arms 3 and 4 which are each provided at
15 their free ends with a rotatably mounted brush 5 and 6 respectively. The arms are pivotable about an axis A-A on an axle 15 which is mounted on a base framework 18, the arms being pivotable about axis A-A by means of an upright hydraulic ram 17a and a tie rod 17b which is connected to the ram 17a.

20 With reference in particular to Figure 1, the arms 3 and 4 each comprise a central portion 27, 26 and two inwardly directed portions, 7 and 11, and 8 and 12 respectively. The adjacent inwardly directed arm portions 11 and 12 are connected to the distal end of the respective central portions 27 and 26 which are located towards the axle 15. The arm

portions 7 and 8 are located at the opposite distal ends of the central portions 27 and 26 respectively.

On each of the arm portions 7 and 8 there is mounted on gimbals 9 and 10 a brush 5 and 6, respectively. The gimbals provide free suspension in all planes for the respective brush. (It should be noted that for reasons of clarity the brushes are shown in a different orientation in the different Figures.) Each brush 5 and 6 comprises bristles provided on a front flat circular surface 30 and on a tapered outer surface 31. The brushes are provided with hydraulic drive means (not illustrated) which is operative to rotate the brushes. Flexible conduits (not shown) which carry the actuating hydraulic fluid are provided internally of the arms 3 and 4. Each arm 3 and 4 is pivotally mounted for generally lateral movement about pivots 21 and 20 in arcs C and D respectively.

The assembly 1 further comprises arm mounting means which comprises an upper limb 19a and a lower limb 19b. The limbs 19a and 19b extend generally longitudinally of the assembly 1. Hydraulic cylinder assemblies 13 and 14 are provided which are pivotally attached at one end to the arm portions 11 and 12 and at the opposite end to a bracket 35, the bracket 35 being secured between the free ends of the limbs 19a and 19b. The limbs 19a and 19b are fixedly secured to the axle 15, the pivots for said axle being provided on two upstanding brackets 36 and 37 which are attached to the base framework 18.

An operating arm 22 is attached at one end to the axle 15 and at its other end to the lower end of the tie rod 17b. The ram 17a and the tie rod 17b are enclosed by an upright framework 16 which comprises two opposing upright members 25 and a plurality horizontal bridges 24, each of which is attached to both upright members and ensures the rigidity of the

upright framework 16. Inclined struts 23 and 25 are attached to a respective upright 25 and to the base framework 18.

The operation the assembly 1 will now be described with reference to Figure 4.

5 The assembly is submerged in a suitable region of water. The assembly 1 is attached to a mooring (not shown) and the base framework 18 rests on the seabed or, if the region of water is of substantial depth, the assembly 1 may be secured to the mooring so that the base framework 11 is above the seabed. A marine vessel, for example a yacht (not shown),
10 is then manoeuvred towards the assembly so that the vessel is positioned above the arms 3 and 4. A winch configuration (not shown) is then attached to a stern line and a bow line of the vessel so that the vessel may be conveyed across the axis A-A. The winch configuration is operative to convey the vessel in either a forwards or a backwards
15 direction.

The tie rod 17a is then actuated by associated hydraulic drive means so that the arms 3 and 4 are pivoted upwardly about horizontal axis A-A towards the surface of the water. On reaching the surface of the water a signal is sent to memory means of the assembly control means by the
20 user so that the vertical position of the tie rod 17b which corresponds to the arms being at the waterline is stored. Position sensing means is then operative to monitor the vertical position of the tie rod 17b. Using the control means, which comprises a console, a user then activates the hydraulic brush drive means so as to rotate the brushes 5 and 6.
25 Hydraulic drive means associated with the hydraulic cylinder devices 13 and 14 is then activated so as to urge the arms 3 and 4 towards the hull of the vessel. Sensing means is provided which is operative to monitor the back pressure of the hydraulic fluid used to actuate the brushes.

Thus when the brushes come into contact with fouling on the hull, resistance to the rotation of the brushes will increase and the sensed back pressure of the hydraulic fluid of the brushes will increase accordingly as a result. The control means adjusts the hydraulic cylinder assemblies 13 and 14 so as to move the brushes towards or away from the hull so that a stored, predetermined value of the back pressure of the hydraulic driving fluid of the brushes is achieved. This predetermined back pressure value is such that an appropriate pressure is applied to the fouling and the hull by the brushes so that fouling is removed with the minimum of any hull paint.

Once the predetermined pressure value has been reached the cleaning operation is commenced and in so doing the hydraulic ram 17a causes the arms 3 and 4 to pivot downwardly about axis A-A. The correct pressure applied to the fouling on the hull is so maintained as the arms pivot about pivots 21 and 20 to follow the curved profile of the hull. The pivots 21 and 20 allow for displacement of the arms 3 and 4 which is generally lateral of the longitudinal axis the hull of the vessel. This is particularly advantageous since there is no requirement to initially align a vessel to the arms 3 and 4 but rather the arms will align to the position of the vessel. Moreover, the length of the arms 3 and 4 is such that only a relatively small force is required to pivot the arms about pivots 20 and 21, and given that the brushes are mounted on the gimbals 9 and 10, the assembly can allow for any side-to-side movement of the vessel caused by wave motion thus reducing the risk of damage being caused to the vessel as a result of such movement during the cleaning process.

As the arms sweep downwards through arc B, the rotating brushes eventually meet underneath the hull. When the brushes come into rotational contact with each other, the senses of rotation of the brushes

are such that the sensed back pressure of the hydraulic brush drive means decreases. In response to this drop in back pressure the control means controls the hydraulic cylinder assemblies 13 and 14 to urge the arms 3 and 4 apart and generally outwardly of the hull. The control means then
5 causes the winch means to be activated to convey the vessel a predetermined distance, typically equal to half the width of the brushes, perpendicular to the axis A-A. Whilst the brushes are still apart the arms are then pivoted generally upwardly of the hull through a predetermined angle by axle 15 and then towards the hull to contact with any fouling
10 thereon. This step of pivoting the brushes outwardly, upwardly and then inwardly ensures that if the vessel has moved laterally during the time that the brushes are in rotating contact under the hull, the brushes can 'locate' the displaced vessel. Once the predetermined value of back pressure of the hydraulic brush drive means is attained, the brushes are
15 pivoted generally upwardly of the hull.

Once the tie rod 17b reaches the predetermined position corresponding to that angular position of the arms 3 and 4 at which the brushes are at water level, the arms 3 and 4 are urged laterally outwardly of the hull so that the brushes are no longer in contact therewith. The vessel is then
20 moved forward the predetermined distance by the winch means. The arms are then urged laterally inwardly of the hull so that the brushes come into contact with the fouling with the required pressure. The brushes are then caused to sweep generally downwardly of the hull. The cleaning process continues in the same fashion until the whole length of
25 the hull has been subjected to the brushes, at which point the winch means will have conveyed the vessel clear of the arcuate paths of the brushes.

It is important to note that the cleaning action of the rotating brushes is more suitably described as a wiping action rather than a scrubbing action. This is because the bristles of each brush are rolled against the fouling on the hull as opposed to using the tips of the bristles.

- 5 It will be appreciated that the assembly 1 may be adapted so that it is the assembly 1 which is conveyed with respect to a substantially stationary marine vessel.

10 The present invention offers many important advantages. Since a marine vessel may be cleaned whilst afloat, the significant financial costs associated with arranging for the vessel to remain on hard-standing are eliminated. Moreover, the time taken to clean a marine vessel using the inventive assembly is greatly reduced compared to that required when the vessel is taken out of the water to be cleaned by conventional methods. Since use of the inventive assembly can avoid the use of anti-fouling
15 paints, the pollution introduced into the marine environment by such substances can be substantially reduced.

It will also be appreciated that whereas the cleaning means of the assembly comprises brushes, the cleaning means may comprise forced water or compressed air. Furthermore the brushes could be driven
20 pneumatically or by a rotating motor.

During operation of the assembly the control means is operative to deactivate the hydraulic cylinder assemblies 13 and 14 and/or the hydraulic ram 17a if a predetermined pressure is exceeded in the assemblies 13 or 14 or the ram 17a respectively.

CLAIMS

1. A marine vessel cleaning assembly (1) comprising cleaning means (5, 6) and displacement means (17a, 17b) supported on a framework (18) adapted for location under the water, the arrangement being such that, in use, the displacement means is operative to urge the cleaning means (5, 6) generally upwardly and downwardly of a hull of a floating marine vessel whilst said cleaning means is in contact with fouling on the hull.
2. A marine vessel cleaning assembly (1) as claimed in claim 1 in which the assembly comprises pivot means (17a, 17b, 15, 22) which is operative to pivot the cleaning means (5, 6), about a substantially horizontal axis (A-A), generally upwardly and downwardly of the hull.
3. A marine vessel cleaning assembly (1) as claimed in claim 2 in which the pivot means (17a, 17b, 15, 22) is operative to pivot the cleaning means (5, 6) about an axis (A-A) which is submerged.
4. A marine vessel cleaning assembly (1) as claimed in claim 1, claim 2 or claim 3 in which the cleaning means (5, 6) comprises rotatably mounted brush means (5, 6) which, in use, is caused to rotate.
5. A marine vessel cleaning assembly (1) as claimed in claim 4 in which the assembly comprises sensing means which is operative to monitor a measure of the resistance to the rotation of the brush means (5, 6).
6. A marine vessel cleaning assembly (1) as claimed in claim 4 or claim 5 in which the assembly comprises control means which is operative to control the degree of generally upwardly and downwardly directed displacement of the brush means (5, 6).

7. A marine vessel cleaning assembly (1) as claimed in claim 1 in which the assembly comprises lateral displacement means (13, 14, 20, 21) which is operative to allow generally lateral displacement of the cleaning means (5, 6) with respect to the hull.

8. A marine vessel cleaning assembly (1) as claimed in claim 1 in which the assembly comprises a pair of arms (3, 4), the cleaning means (5, 6) being mounted on the arms (3, 4).

9. A marine vessel cleaning assembly (1) as claimed in claim 8 in which the cleaning means (5, 6) is located towards one end of each arm (3, 4).

10. A marine vessel cleaning assembly (1) as claimed in claim 8 in which each arm (3, 4) is pivotable generally upwardly and downwardly of the hull.

11. A marine vessel cleaning assembly (1) as claimed in claim 8 in which each arm (3, 4) is pivotable generally laterally of the hull.

12. A method of cleaning the hull of a floating marine vessel comprising displacing cleaning means (5, 6) generally upwardly and downwardly of the hull, and arranging that the cleaning means contacts with fouling on the hull.

13. A method as claimed in claim 12 in which the cleaning means is pivoted generally upwardly and downwardly of the hull.

14. A method as claimed in claim 13 in which relative translational movement of the hull with respect to the pivotal axis (A-A) of the cleaning means (5, 6) is brought about.

15. A method as claimed in claim 12, claim 13 or claim 14 in which the cleaning means (5, 6) is caused to rotate.

16. A method as claimed in claim 15 in which the degree of generally upwardly
5 and downwardly directed movement of the cleaning means (5, 6) is controlled in response to a measure of the resistance to rotation of the cleaning means.

ABSTRACT

A marine vessel cleaning assembly (1) comprising cleaning means (5, 6) and displacement means (17a, 17b) supported on a framework (18) for location under the water, the cleaning means comprising a pair of brushes (5, 6) rotatably mounted on a pair of arms (3, 4) which are pivotable about a submerged axis (A-A). In use the brushes are caused to rotate and contact fouling on the hull of the vessel and are pivoted generally upwardly and downwardly of the hull, the vessel being conveyed with respect to the pivotal axis of the arms (3, 4) so that the entire hull of the floating vessel may be cleaned. The inventive cleaning assembly advantageously eliminates the significant financial costs associated with arranging for a marine vessel to remain on hard-standing and also reduces the time required to clean the hull of a marine vessel.

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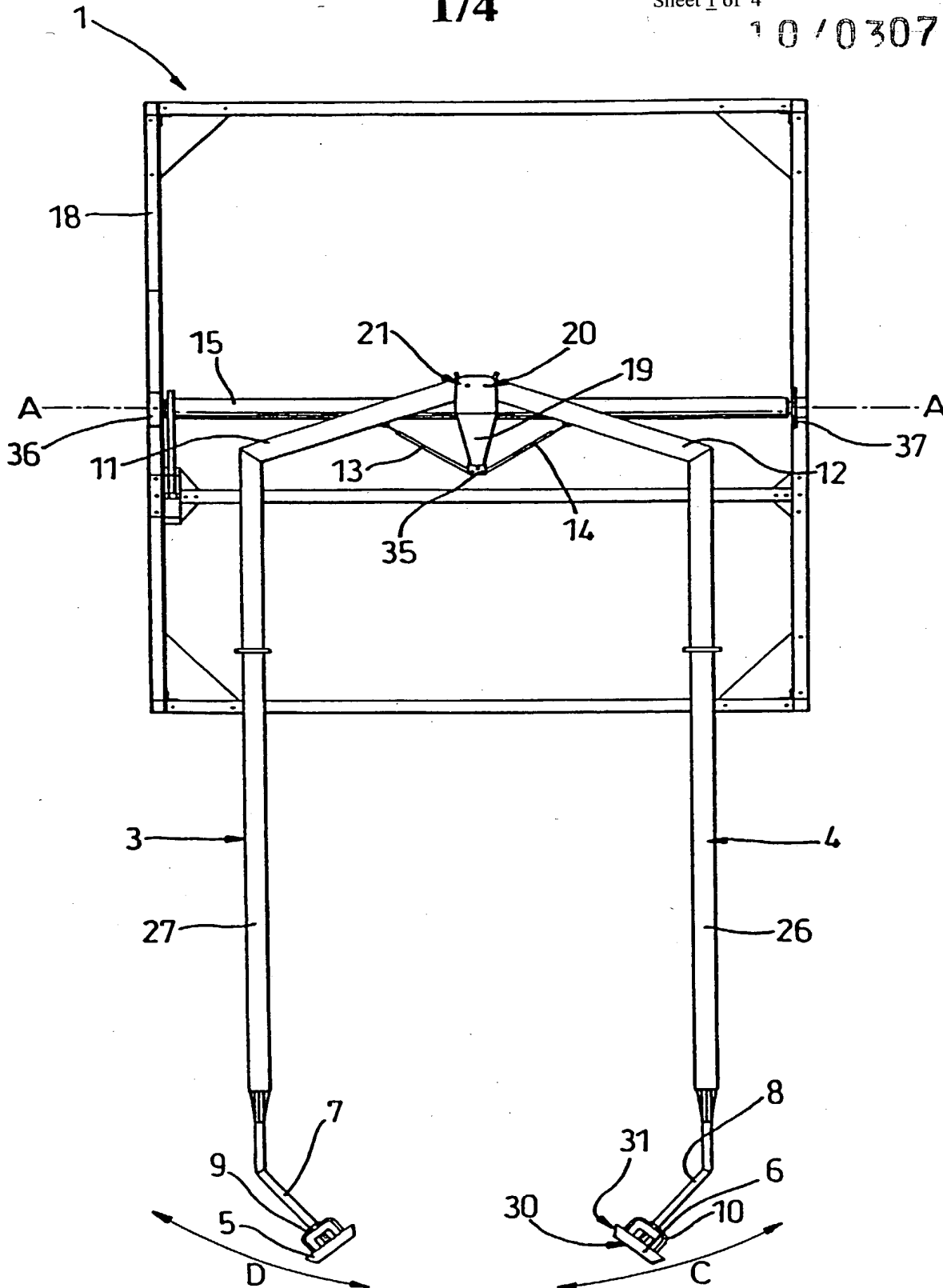


Fig. 1

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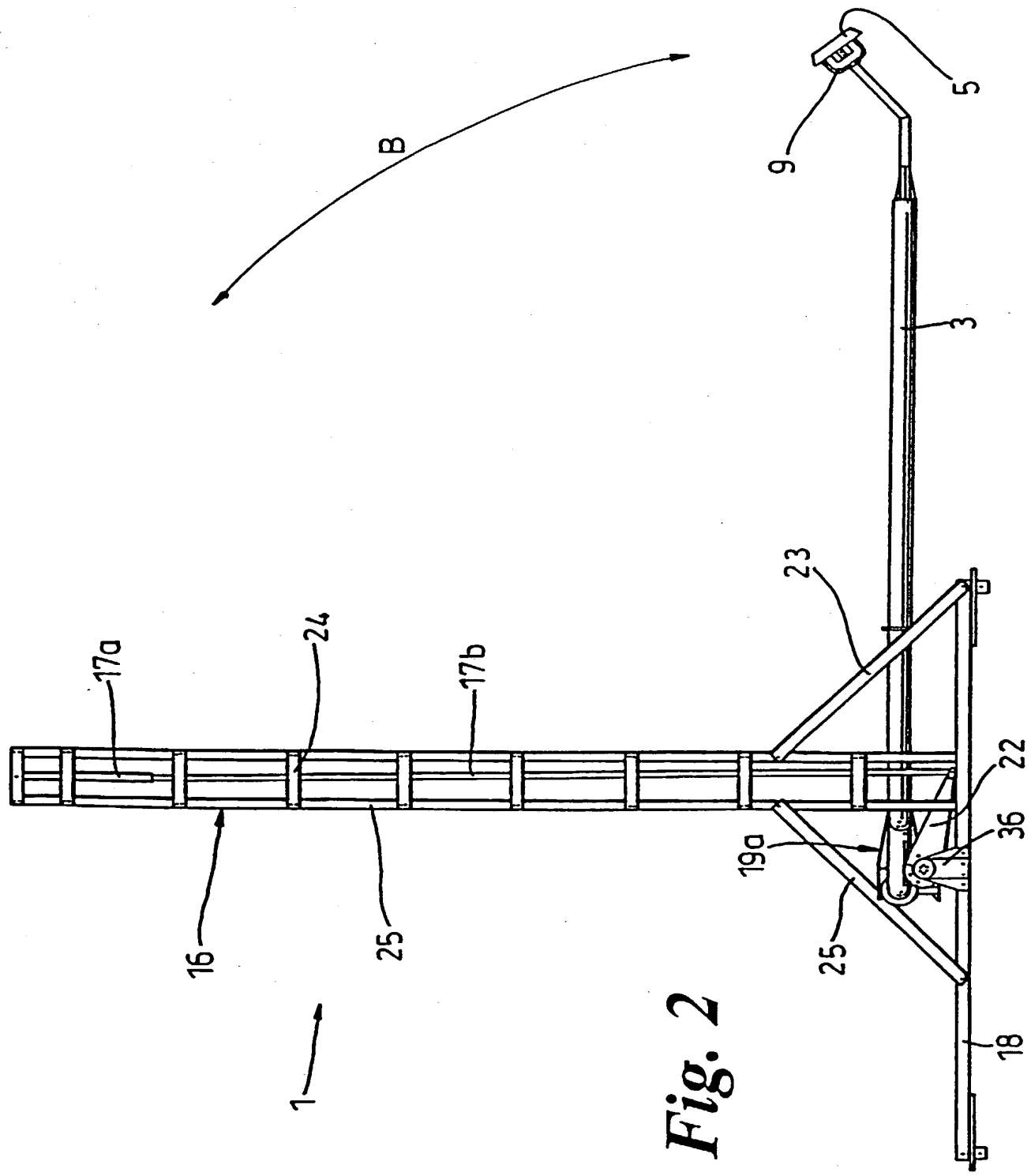


Fig. 2

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DERO SITS & NOAH LLP (415) 705-6377

Express Mail Label No. EL902869200US

Title: BOAT CLEANING ASSEMBLY

Inventor: HUDD, Adrian Gerald

Filing Date: December 28, 2001

Sheet 3 of 4

Atty Docket: 543.02

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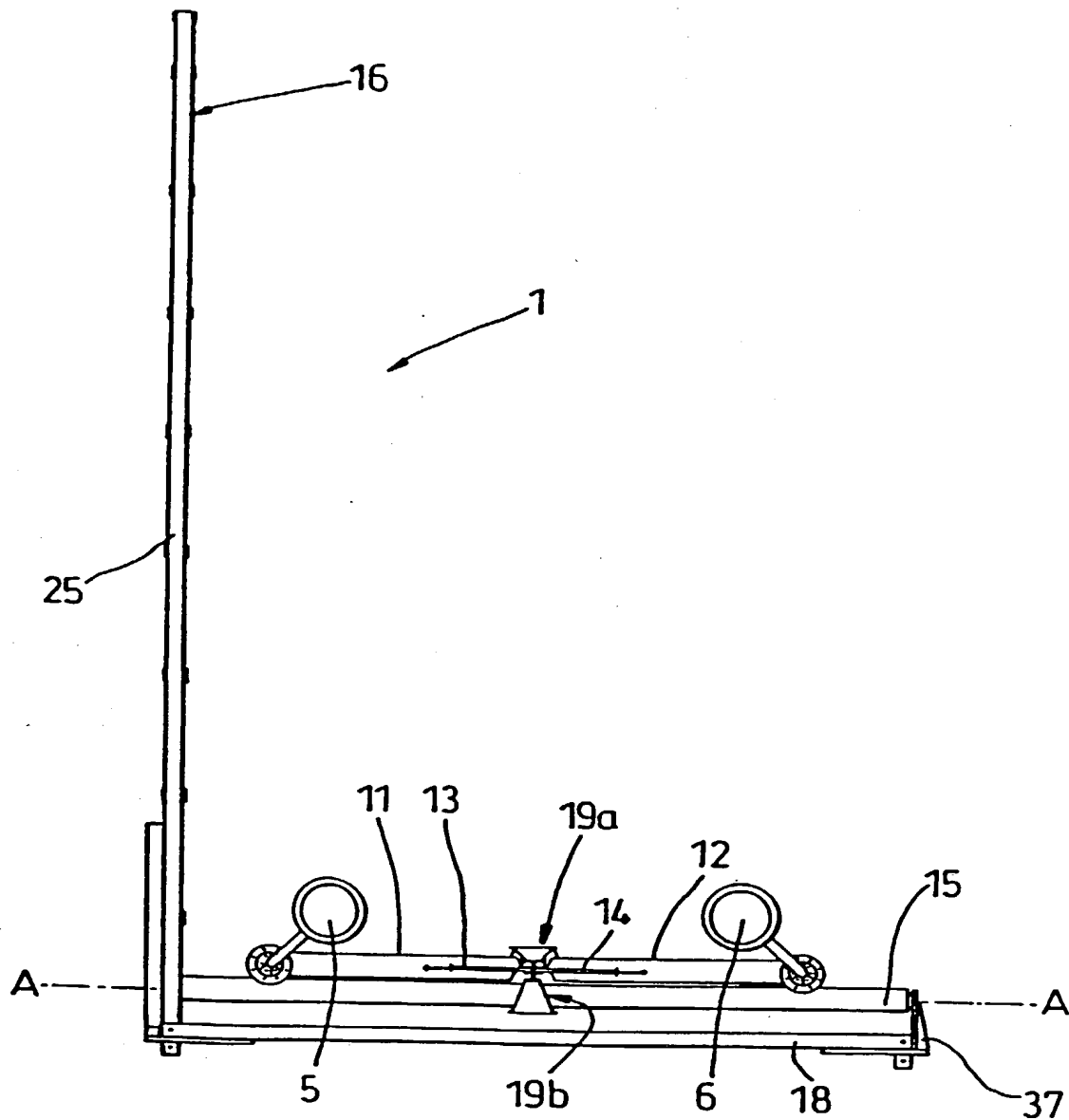


Fig. 3

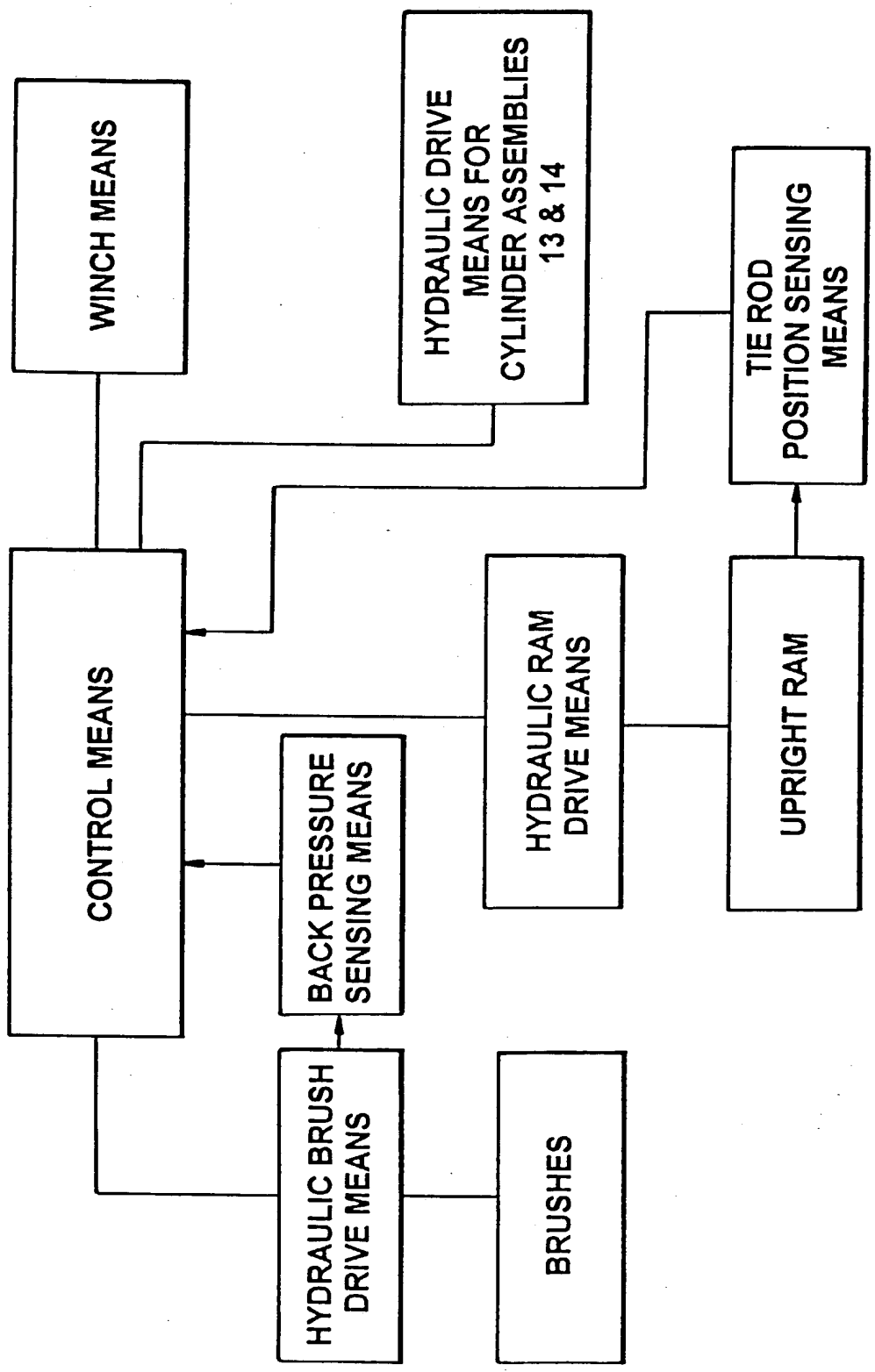


Fig. 4

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#24

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

BOAT CLEANING ASSEMBLYthe specification of which (check one) ☐ is attached hereto or ☒ as filed on December 28, 2001 as Application Serial No. 10/030,754 was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, U.S.C. 119(a)-(d) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed
Yes No

Number	Country	Day/Month/Year Filed
PCT/GB00/02505	PCT	29/06/2000

X

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Prior Provisional Application(s)

Priority Claimed
Yes No

Number	Country	Day/Month/Year Filed
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I hereby claim the benefit under Title 35, U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, C.F.R. 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Prior Application(s)

Priority Claimed
Yes No

Number	Country	Day/Month/Year Filed
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Jan-16-03 8:47AM;

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ATTORNEY DOCKET NO: 543.02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)

Group Art Unit:)

Adrian Gerald HUDD)

Examiner:)

Serial No.: 10/030,754)

POWER OF ATTORNEY)

Filed: December 28, 2001)

For: BOAT CLEANING ASSEMBLY)

Commissioner for Patents
Washington, D.C. 20231

Sir:

Adrian Gerald HUDD, owner of the above-identified application, hereby appoints the members of the firm of DERGOSITS & NOAH LLP, a firm composed of Michael E. Dergosits (Reg. No. 31,243), Todd A. Noah (Reg. No. 35,626), Richard A. Nebb (Reg. No. 33,540), Geoffrey T. Staniford (Reg. No. 43,151), Paul K. Tomita (Reg. No. 43,196), Andrew B. Schwaab (Reg. No. 38,611), Samuel S. Lee (Reg. No. 41,938) and Malcolm B. Wittenberg (Reg. No. 27,028), Philip M. Shaw (Reg. No. 25,376), Four Embarcadero Center, Suite 1150, San Francisco, California 94111, (415) 705-6377, (415) 705-6383 (fax), as its attorneys with full power of substitution to prosecute this application and to transmit all business in the Patent and Trademark Office in connection therewith.

Please direct all correspondence regarding this application to the following:

Before February 1, 2002

Malcolm B. Wittenberg
Dergosits & Noah LLP
Four Embarcadero Center, Suite 1150
San Francisco, California 94111

After February 1, 2002

Malcolm B. Wittenberg
Dergosits & Noah LLP
Four Embarcadero Center, Suite 1150
San Francisco, California 94111

Dated: Jan 16, 2003By: Adrian Gerald HUDDName: Adrian Gerald HUDDTitle: Owner

Sent By: Dergosits & Noah LLP;

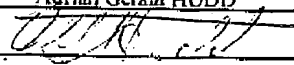
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ATTORNEY DOCKET NO: 543.02

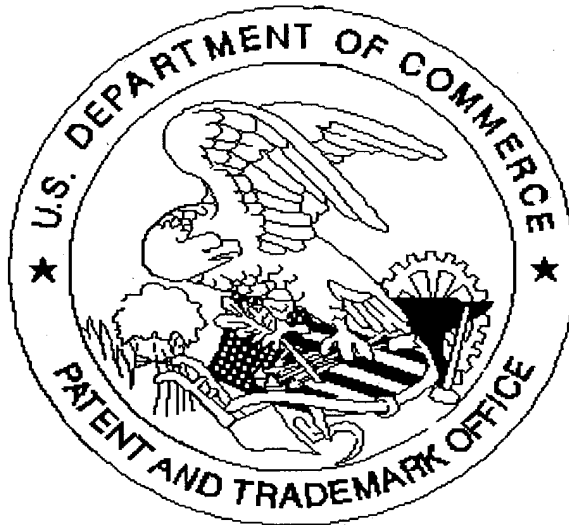
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1-00 Full name of first joint inventor: Adrian Gerald HUDDInventor's signature: Residence: Yarmouth, Isle of Wight, Great Britain

Date

GBK 10 January 2002Citizenship: Great BritainPost Office Address: 5 Waters Edge, Port La Salle, Yarmouth, Isle of Wight, PO41 0XD, Great Britain

United States Patent & Trademark Office
Office of Initial Patent Examination -- Scanning Division



Application deficiencies found during scanning:

☐ Page(s) _____ of _____ were not present
for scanning. (Document title)

☐ Page(s) _____ of _____ were not
present
for scanning. (Document title)

☒ Scanned copy is best available. Declaration pages have
black line.